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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,470	11/08/2001	Randy M. Arnott		3980

7590 05/19/2004

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EXAMINER	
IQBAL, NADEEM	

ART UNIT	PAPER NUMBER
2114	

DATE MAILED: 05/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/035,470	ARNOTT ET AL.	
	Examiner	Art Unit	
	Nadeem Iqbal	2114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 November 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 & 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Menon (U.S. Patent number 5485571).

3. Menon teaches (col. 4, lines 17-20) that the data regions, parity regions, and spare regions in a redundant array of storage units are distributed such that each storage unit in the array has the same number of parity regions before, during, and after a failure of one or more storage units. He thus teaches configuring the array with D disk drives of B physical blocks each. He also teaches allocating N user data and redundant data blocks to each disk drive, and allocating F free blocks since he teaches (col. 4, lines 40-44) organize storage units into data regions, a parity region, spare regions. He also teaches (col. 4, lines 58-60) that spare regions are assigned in blocks of nx(n+1) across the first n+2 storage units with rotation until spare regions have been assigned across the first n+2 storage units. He thus teaches limitations pertains to F free blocks as hot spare space to each disk drive, where N+F<=B, and (D-M) X F) >= N to enable rebuilding of data and redundant blocks of failed disk drive in the free blocks of the remaining disk drives.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 2-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Menon (U.S. Patent number 5485571).

7. As per claims 2 & 3, He also teaches (col. 4, lines 25-28) that a distribution of data regions, and spare regions in the single failure case can be easily applied recursively to manage multiple failures of storage units and ensure uniform workload distribution. He does not explicitly disclose moving the new data and redundant data into the hot spare space and rearranging all of the data and redundant blocks. He also teaches (col. 4, lines 18-20) a redundant array of storage units distributed such that each storage unit in the array has the same number of parity regions before, during, and after a failure of one of more storage units. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to realize that

He would also move the new data and redundant data into the hot spare space and rearranging all of the data and redundant blocks since he teaches that the redundant array of storage units distributed such that each storage unit in the array has the same number of parity regions before, during, and after a failure of one of more storage units.

8. As per claims 4 & 5, He also teaches (col. 4, lines 25-28) that a distribution of data regions, and spare regions in the single failure case can be easily applied recursively to manage multiple failures of storage units and ensure uniform workload distribution, he thus teaches to generate new data and move new data and redundant data into hot spare space, and rearrange all of the data and redundant data.

9. As per claim 6, He teaches (col. 4, lines 18-20) a redundant array of storage units distributed such that each storage unit in the array has the same number of parity regions before, during, and after a failure of one of more storage units, thereby providing a uniform workload distribution among the storage units during normal operation, during the rebuild process, and during operation after the rebuild, therefore his redundant data would be mirror blocks to provide a uniform workload distribution among the storage units during normal operation, during the rebuild process, and during operation after the rebuild.

10. As per claim 7, He teaches (col. 4, lines 18-20) a redundant array of storage units distributed such that each storage unit in the array has the same number of parity regions before, during, and after a failure of one of more storage units, therefore the redundant data are parity blocks.

11. As per claim 8, He teaches as stated above a distribution of data regions, and spare regions in the single failure case can be easily applied recursively to manage multiple failures of

storage units and ensure uniform workload distribution, therefore would use all disk drives except failed disk drives as claimed.

12. As per claim 9, He teaches (col. 5, lines 62-65) that the rebuild process has been completed using the exclusive-OR logical operator. He thus uses an exclusive-OR operation for generating.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nadeem Iqbal whose telephone number is (703)-308-5228. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W Beausoliel can be reached on (703)-305-9713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nadeem Iqbal
Primary Examiner
Art Unit 2114

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